

these claims as to form and, in some instances, adds further features of the invention.

The specification has been amended as to form.

The Official Action objected to claim 11 due to form. Claim 11 has been responsively amended.

The Official Action rejected claims 3-5, 7-9 and 13-14 under §112, second paragraph, as being indefinite.

All of the pending claims have been carefully reviewed and amended as to form so as to remedy the stated basis of rejection and to address the form of the claims. Accordingly, reconsideration and withdrawal of the indefiniteness rejection are respectfully requested.

The Official Action rejected all of the claims as obvious over NEEF et al. 5,353,238.

The pending claims have been amended so as to patentably distinguish the present invention over the welding robot diagnostic system of NEEF et al. The present invention deals with a process of assisting welding users in solving problems that can arise not only during, but also before and after a welding operation. NEEF et al. do not disclose such a system and does not disclose the inventive system as presently recited.

The reference discloses an on-line real time process monitoring system that determines the existence of a plurality of trouble conditions and determines which condition from the

plurality should be responded to first. The reference does not teach the present invention's method and system of a user forming a specific query, the user transmitting the query to a computer/database, the computer forming a responsive proposal, the computer providing the user with the proposal, and the user taking information from the proposal and combining this information with experience in making a determination as how to proceed.

In contrast to the present invention, the reference is only a monitoring apparatus and method for carrying out real time monitoring of an ongoing (not future or past) industrial process being executed by an industrial tool. It is true that there is disclosed an embodiment where the process is a complex welding activity wherein multiple welds are made in a work piece. However, any similarity does not anticipate or render obvious the amended claims.

Indeed, rather than the user forming a query, the reference teaches that the apparatus includes circuitry for sensing a plurality of analog and digital inputs from the tool with interface circuitry conditioning the signals received from the sensors and generating electrical representations thereof compatible with other circuitry. The teaching is of an automated system not of a user-interactive query-responsive system for diagnosing and/ or solving welding problems.

In the reference, the system determines a next action to a current situation. The reference does teach that the highest priority trouble condition is used to retrieve a prestored visual screen (or screens) that is (are) indicative of the trouble condition, and that the prestored screen (or screens) can then be displayed for review by an operator. However, note that this is not responsive to a user-formed query as recited.

As per claim 1, the reference does not disclose a welding assistance method for a user to exploit information available at a remote computer welding database into a contemplated welding operation.

More specifically, the reference is not seen as teaching a user supplying an information request to the database, the information request comprising

a first indication by the user of a type of contemplated heat treatment process,

a second indication by the user of at least one type of technical problem to be solved arising or likely to arise during implementation of the contemplated heat treatment process, and

a third indication by the user of at least one parameter relating to a configuration of the contemplated heat treatment process. The claim requires three user inputs in forming a query. The reference does not disclose these three user-provided indications.

Although the reference may suggest a database, the reference is not seen as disclosing the database processing of at least some of the first, second, and third indications or selections made by the user and, after the processing, the database supplying information relating to the contemplated heat treatment process as a proposal to the user of at least some information relating to at least one modification or at least one adjustment to be made to at least one configuration parameter of the contemplated heat treatment process so as to solve, at least partly, the type of technical problem supplied by the user in the second indication. Without such a teaching, there is no anticipation or obviousness.

Although the reference may teach providing a user with information, the reference is not seen as disclosing the user receiving information in a proposal and the user combining that information with user experience and user information to perform a welding operation of the contemplated heat treatment process by setting, modifying, or adjusting at least one parameter of the welding operation based on the information in the proposal.

The reference, rather, executes operations or directs operations rather than providing information that the user combines with user's experience and user's own information to perform a welding operation of the contemplated heat treatment process by setting, modifying, or adjusting the welding operation.

In view of all these shortcomings in the reference, the obviousness rejection is not believed to be viable.

Accordingly, reconsideration and allowance of all the pending claims are respectfully requested.

Attached hereto is a marked-up version showing the changes made to the specification and claims. The attached page is captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE."

Respectfully submitted,

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"VERSION WITH MARKINGS TO SHOW CHANGES MADE"

IN THE SPECIFICATION:

Page 24, the paragraph, beginning on line 13, has been amended as follows:

--The information from the operator is then transmitted, for example by a wire link 2 and/or a radio link 12, to a data processing server 3 which makes it possible to process this information and which, after this processing, presents the user with one or more technical solutions to be applied so that his welding process is modified effectively, that is to say presents him with one or more items of corrective information, modifications or adjustments to be made to one or more configuration parameters of said heat treatment process so as to try to solve the technical problem encountered.--.

IN THE CLAIMS:

Claim 1 has been amended as follows:

--1. (amended) [Method for diagnosing and/or solving, in particular remotely, a technical problem likely to arise before, during or after the operation of a heat treatment process] A welding assistance method for a user to exploit information available at a remote computer welding database in a contemplated welding operation, comprising the steps of:

the user supplying an information request to the database, the information request comprising

(a) a first indication and/or selection by the user of a type of contemplated heat treatment process [implemented or to be implemented;],

(b) a second indication and/or selection by the user of at least one type of technical problem to be solved arising or likely to arise during implementation of [the type of] the contemplated heat treatment process [of step (a);], and

(c) a third indication and/or selection by the user of at least one parameter[, preferably several parameters,] relating to [the] a configuration of the [said] contemplated heat treatment process [of step (a)];

[(d)] the database processing of at least some of the first, second, and third indications or selections made by the user [in steps (a), (b) and (c)];

[(e)] after the processing step, the database supplying information relating to the contemplated heat treatment process as a proposal to the user of at least some information relating to at least one modification or at least one adjustment to be made to at least one configuration parameter of the [said] contemplated heat treatment process so as to solve, at least partly, the type of technical problem [of step (b)] supplied by the user in the second indication; and

the user receiving the information in the proposal and combining that information with user experience and user information to perform a welding operation of the contemplated heat treatment process by setting, modifying, or adjusting at least one parameter of the welding operation based on the information in the proposal.--

Claim 2 has been amended as follows:

--2. (amended) Method, utilizing a remote welding computer database, for determining, setting, adjusting and/or modifying at least one parameter of a heat treatment process[, before or during implementation of the said heat treatment process by a user], comprising the steps of:

prior to beginning any heat treatment process, the user making a query to the database in the form of

[(a')] a first indication and/or selection by the user of a type of heat treatment process [implemented or] to be implemented[;], and

[(b')] a second indication and/or selection by the user of at least one parameter relating to the configuration of the [said] heat treatment process, that has to be or is likely to be adjusted, modified or set, before or during implementation of the heat treatment process of [step (a')] the first indication;

[(c')] the database processing of at least some of the first and second indications or selections made by the user [in steps (a') and (b')];

[(d')] the computer providing a proposal to the user of at least some information relating to at least one modification or at least one setting to be made of at least the [said] configuration parameter of the [said] heat treatment process.--

Claim 3 has been amended as follows:

--3. (twice amended) Method according to claim [1] 2, characterized in that it includes at least one additional step:

[(f)] of displaying, storing, printing, transmitting, interpreting and/or exporting at least some information obtained [in step (e) or in step (d')] from the database; [and/or] and

[(g)] of modifying or setting at least one configuration parameter[, preferably several configuration parameters,] of the [said] heat treatment process according to at least some information obtained [in step (e) or in step (d')] from the proposal.--

Claim 4 has been amended as follows:

--4. (twice amended) Method according to claim 1, [characterized in that in step (a) or (a')] wherein,

the type of contemplated heat treatment process [implemented or to be implemented] is [chosen or selected] from the group formed by cutting processes, welding processes, marking processes, heat spraying processes and combinations thereof.--

Claim 5 has been amended as follows:

--5. (twice amended) Method according to claim 1, [characterized in that in steps (a), (b) and/or (c) or (a')]

and/or (b'))] wherein, the indication or the selection is made by the user via [data or information acquisition and/or selection means] interactive computer means.--

Claim 6 has been amended as follows:

--6. (twice amended) Method according to claim 1, [characterized in that, in step (f)] wherein, the indications are taken from selections shown on a computer display and user input is made on a touchscreen.--

Claim 7 has been amended as follows:

--7. (twice amended) Method according to claim 1, [characterized in that, in step (b) or in step (b')], the type of technical problem to be solved is a problem relating to:] wherein, the second indication concerns [- the] a choice of [the] consumables[,

the parameters of the process, the setting of a piece of equipment or of a fitting;

- health or safety;
- malfunction of a piece of equipment or a fitting;
- the productivity of the process;
- the quality of the work produced] .--

Claim 8 has been amended as follows:

--8. (twice amended) Method according to claim [1] 2, [characterized in that in step (c) or in step (b')] wherein, the second indication is at least one configuration parameter of the [said] heat treatment process and is chosen from the voltage, the

current, the feed rate of the filler wire, the speed of advance or welding speed, the nature of the filler wire or electrode, the nature of the shielding gas, its flow rate and/or its quality, the choice of solid flux associated with the wire in submerged-arc welding, the orientation and position of the welding torch with respect to the weld to be produced, the preparation and the thickness of the workpieces to be joined together or, in the case of cutting, the cutting speed and/or the gas used.--

Claim 9 has been amended as follows:

--9. (twice amended) Method according to claim 1, [characterized in that in step (d) or in step (c'), the processing of] wherein, the indications or selections made by the user comprises:

(i) a comparison of the [said] indications or selections with reference information stored in at least one database or databank, and

(ii) a proposal of at least one solution, of an explanation and/or of an answer to a question raised, the [said] solution, explanation and/or answer being stored in at least one database or databank.--

Claim 10 has been amended as follows:

--10. (twice amended) Method according to claim 1, [characterized in that a module for the automatic acquisition of the welding parameters and for the transmission of the said welding parameters] wherein, the proposal is sent to a display

screen [is incorporated,] allowing at least one of the [said] welding parameters to be displayed.--

Claim 11 has been amended as follows:

--11. (amended) [System for diagnosing and/or solving, in particular remotely, a technical problem likely to arise before, during or after] A welding assistance system for assisting a user in implementation of a heat treatment process, comprising:

[(a)] an information [acquisition and/or selection means] query tool allowing a user to [indicate and/or select:] form a technical problem query concerning

[(i)] a type of heat treatment process implemented or to be implemented,

[(ii)] at least one type of technical problem to be solved that has arisen or is likely to arise during implementation of the type of heat treatment process, and

[(ii)] at least one parameter, preferably several parameters, relating to the configuration of the [said] heat treatment process[.];

[(b) information processing means] a welding computer comprising a welding database operatively connected to the information query tool to receive the user query and for processing [at least some of the indications and/or selections made by] the user [with the aid of the information acquisition and/or selection means] query by interaction with the welding

database to obtain a responsive information to the user query;
and

[(c)] an information delivery means for displaying, storing, printing, transmitting, interpreting and/or exporting the responsive information comprising at least one piece of information relating to at least one modification and/or at least one setting to be made of at least one configuration parameter of the [said] heat treatment process so as to solve, at least partly, the [said] technical problem.--

Claim 12 has been amended as follows:

--12. (amended) System according to Claim 11, [characterized in that it] wherein,

the user query tool comprises a user station comprising[:]

- a central processing unit [with at least one micro-processor, at least one RAM or ROM memory unit and/or at least one hard disk, which has a storage function, which these elements are] coupled to a network card or a modem; and

- a screen allowing information to be displayed;
[and/or] and

- a data entry keyboard, a mouse, a touchscreen and/or a voice recognition system[;],

[and] the [said] user station interacting remotely via a network with [at least one central server holding at least one] the welding computer and the welding database [or databank

containing at least some of the knowledge necessary for solving problems likely to arise during implementation of heat treatment processes].--

Claim 13 has been amended as follows:

--13. (twice amended) System according to claim 11, [characterized in that the link between the user station and the central server comprises a remote communication network or line, especially] wherein, the user query tool interacts with the welding computer via the Internet [network].--

Claim 14 has been amended as follows:

--14. (twice amended) System according to claim 11, [characterized in that it includes data transmission means allowing the choices or selections made by the user by means of the information acquisition and/or selection means to be transmitted to the said central server] wherein, the user query tool comprises data transmission of a network to the welding computer.--

Claim 15 has been amended as follows:

--15. (amended) [Information] A welding information processing system [intended to facilitate] supplementing a human welding operator's experience with specific information through the acquisition of an answer to a question or a solution to a technical problem associated with a welding heat treatment operation, comprising:

- link activation means allowing [an] the operator to activate a link to at least one database by means of at least one processor and to at least one program contained in at least one memory;

- at least one link [which makes it possible to activate], via a wire or radio network, to at least one information storage and processing tool[, particularly a hypertext link];

- at least one information storage and processing tool containing [at least one piece of] welding information stored in one or more files held in at least one memory and operating by means of an executable installed in at least one information system;

- at least one executable which, by means of at least one processor, makes it possible to search for [the] requested welding information in at least one database, [to extract it, possibly to store it momentarily in the random-access memory,] and then to send [it] a welding proposal based on the requested welding information back to the operator as a reply;

- means for displaying or receiving information allowing the operator to receive and/or display the reply formed from at least one piece of information.--